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VIA ELECTRONIC FILING

Chairman Tom Wheeler
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

GN Docket No. 12-268, *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*; WT Docket No. 12-269, *Policies Regarding Mobile Spectrum Holdings*

Dear Chairman Wheeler:

I write today to urge the Commission to increase the amount of reserved spectrum in the upcoming 600 MHz Auction from 30 to at least 40 megahertz.¹ Mobile broadband providers need largely unimpaired, low-band spectrum to compete effectively in the wireless marketplace, but the two dominant providers currently hold more than 73 percent of all low-band spectrum available for commercial use across the entire industry today.² Increasing the reserve to at least 40 megahertz of largely unimpaired spectrum will give competitive carriers an opportunity to secure the low-band spectrum necessary to provide more extensive and more reliable service in urban and suburban areas, and deploy new competitive services in less populated areas of the country.³

All spectrum is not created equal. The 600 MHz spectrum is particularly valuable because it penetrates buildings more readily and covers a much wider geographic area with fewer transmitters than higher-band spectrum. All carriers need a mix of both high- and low-band

¹ *Petition for Reconsideration of T-Mobile USA, Inc.*, Docket No. 12-269 (Aug. 11, 2014) (“*T-Mobile Petition for Reconsideration*”).

² *Policies Regarding Mobile Spectrum Holdings: Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6133, 6162 ¶ 58 (2014) (“*MSH Order*”).

³ See, e.g., *Ex Parte Submission of the United States Department of Justice*, Docket No. 12-269 at 1 (Apr. 11, 2013) (“*DOJ Ex Parte Submission*”) (“[T]he Department concludes that rules that ensure the smaller nationwide networks, which currently lack substantial low-frequency spectrum, have an opportunity to acquire such spectrum could improve the competitive dynamic among nationwide carriers and benefit consumers.”); *Comments of Sprint Nextel Corp.*, Docket No. 12-269 (Nov. 28, 2012); *Reply Comments of Sprint Nextel Corp.*, Docket No. 12-269 (Jan. 7, 2013); *Reply to Oppositions of Competitive Carriers Association*, Docket No. 12-269 (Oct. 6, 2014); *Comments of United States Cellular Corp.*, Docket No. 12-269 (Nov. 28, 2012); *Reply Comments of United States Cellular Corp.*, Docket No. 12-269 (Jan. 7, 2013).

spectrum to compete effectively, but, given the highly concentrated nature of low-band resources in the wireless market and the very limited supply of those resources, continued concentration of low-band spectrum with the two dominant carriers will have a pronounced effect on competition and consumers.

Without a reserve of at least 40 megahertz, AT&T and Verizon will be able to increase their low-band spectrum holdings, entrench their dominant positions in the wireless marketplace, and choke off any threat of competition in the future. Verizon and AT&T have deployed networks in many areas of the country that would not be economically feasible without low-band spectrum's exceptional propagation characteristics.

Not only are the "Big Two" the largest in terms of customers, but also they control a disproportionate share of the industry's revenue and free cash flow.⁴ And they have shown that they can and will use their resources to prevent competitors from acquiring needed spectrum. The AWS-3 Auction provides a perfect example: AT&T and Verizon foreclosed any meaningful competition from direct competitors by outspending all other facilities-based wireless carriers by more than ten to one.⁵ So while implementing a spectrum reserve in the 600 MHz Auction to ensure that a variety of competitors have access to low-band spectrum is a step in the right direction, 30 megahertz is simply insufficient to promote the competitive environment that our industry so desperately needs.

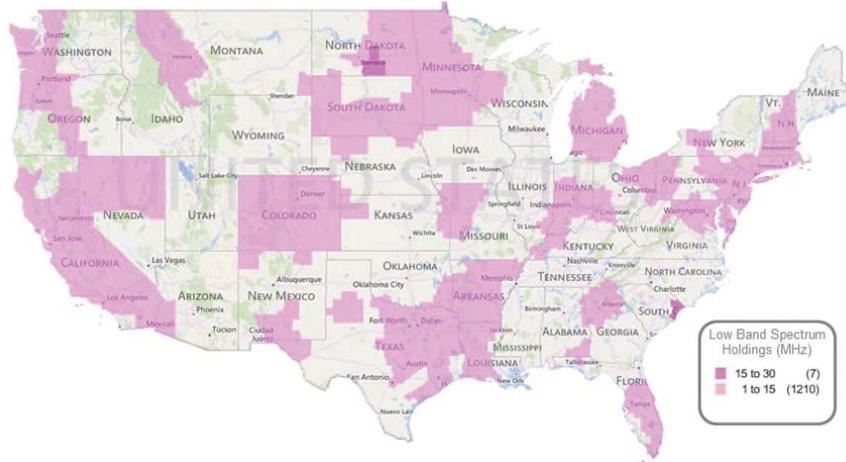
Largely as a result of spectrum giveaways from the government before the Commission received auction authority, the two dominant incumbents have roughly 50 megahertz of low-band spectrum each.⁶

⁴ Together, AT&T and Verizon control 72 percent of the industry's revenues, and 94 percent of the free cash flow.

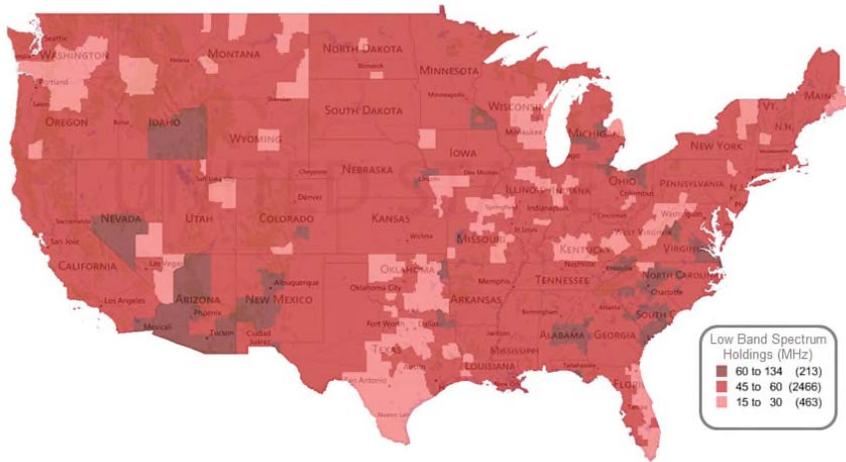
⁵ See *Winning Bidders Announced for Auction 97*, Public Notice, 30 FCC Rcd 630, Attachment B (Jan. 30, 2015) (showing that AT&T and Verizon spent a combined \$28.6 billion while all other facilities-based carriers, including T-Mobile, were able to win licenses worth only \$2.7 billion).

⁶ *Wireless Telecommunications Bureau Assignment of License Authorization Applications*, Public Notice, Report No. 9573A (May 7, 2014).

The maps provided below illustrate the significant disparity of low-band spectrum holdings between T-Mobile and the incumbent carriers.⁷

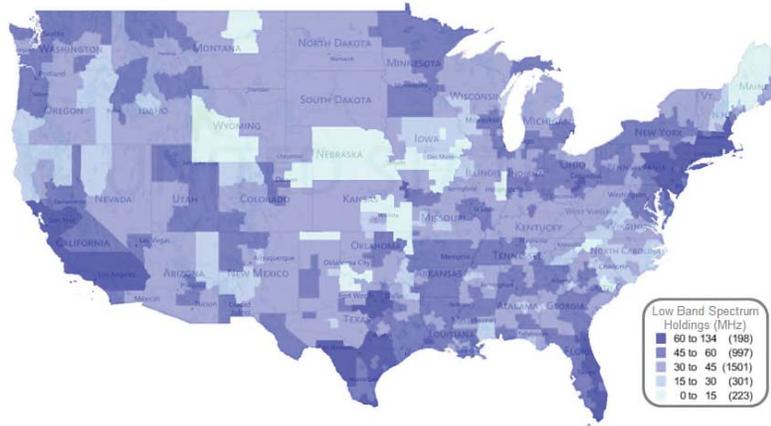


T-Mobile Low-band Spectrum



Verizon Low-band Spectrum

⁷ Maps are based on internal T-Mobile analysis of information that is publicly available via the Commission's Universal Licensing System (ULS).



AT&T Low-band Spectrum

We have aggressively pursued secondary market acquisitions of low-band spectrum and are deploying 700 MHz A Block spectrum where we can, although our efforts are slowed in many areas by the presence of adjacent channel 51 television transmissions and associated interference concerns. The results achieved so far with these low-band frequencies exceed our already high expectations of benefit in areas covered by both mid- and low-band spectrum. Indeed, the recorded signal strength is on average *eight times* stronger after low-band deployment than before low-band deployment.⁸ Post-deployment results from suburban Cleveland indicate that the signal range from a 700 MHz tower is approximately 1.8 times greater than our mid-band spectrum, which means low-band spectrum allows us to provide a coverage area three times as great as we could using higher-frequency bands, such as PCS and AWS.⁹

We also find that these superior propagation characteristics of low-band spectrum dramatically reduce the cost of deployment by decreasing the number of sites needed to cover a market with the same signal strength. Low-band spectrum allows us to deploy far fewer costly radio base stations than mid- or high-band deployments while still offering comparable coverage and service. Low-band spectrum also opens many new options for base station locations. Due to a variety of Federal, state and local restrictions, some areas of major markets have proven exceptionally challenging for us to serve with access only to shorter-range, higher-frequency spectrum. The introduction of low-band spectrum provides us with new flexibility to avoid environmentally or historically sensitive areas where the construction of a single base station, if

⁸ Specifically, we found that 700 MHz spectrum is 9 dB stronger in areas served by both mid- and low-band spectrum, which corresponded with our previous projections. *See* Letter from Trey Hanbury, Counsel to T-Mobile to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, WT Docket No. 12-269 (Apr. 1, 2014), Declaration of Mark McDiarmid at 17-18, 20 (“It would take roughly 8 cell sites using 1.9 GHz spectrum to cover the same area as one base station using 700 MHz, and at least 13 cell sites at 2.5 GHz to cover the same area as one 700 MHz tower.”).

⁹ This increased range is particularly important in rural markets, where lack of low-band spectrum largely prevents carriers from providing service except through costly roaming arrangements, further widening the competitive gap between the dominant carriers and all other providers. *See* Letter from Trey Hanbury, Counsel to T-Mobile to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, WT Docket No. 12-269 (Apr. 23, 2015) (explaining that cost-effective network deployments in rural areas are virtually impossible without low-band spectrum).

it is even feasible, can consume millions of dollars in lease and construction costs and require years to navigate a complex regulatory approval process.

T-Mobile's post deployment measurements also show that deployment of 700 MHz spectrum dramatically improves our network's in-building penetration. In Cleveland, for example, we tested signal strength inside several buildings where we know consumers frequently use mobile broadband. We found that the measured coverage quality within these buildings is up to **50 times greater** since our 700 MHz deployment.¹⁰ This increase represents the difference between not receiving a signal at all and receiving a very strong signal that can reliably support high-definition voice calls and high-capacity broadband services.

However, the major shortcoming of our deployed 700 MHz spectrum is that available supply is limited. T-Mobile's current 5+5 megahertz low-band deployment effectively caps the number of subscribers that we can serve—dramatically so in comparison to the Big Two and their dominant low band holdings. This limitation also constrains both average and peak supportable speeds at a time when these capabilities are becoming ever more important to consumers. Auction participants that are only able to acquire a 5+5 megahertz block because of an insufficient spectrum reserve will be similarly limited in their ability to serve customers and offer innovative services.

One essential element of a robust wireless network is a diversified set of spectrum holdings that incorporate at least 10+10 megahertz of low-band spectrum.¹¹ A reserve comprised of only 30 megahertz allows only a single competitive carrier to acquire a 10+10 megahertz block without being blocked by the foreclosure tactics of the two dominant incumbents. Meanwhile, the smaller 30 megahertz reserve would allow AT&T and Verizon to split the minimum 40 megahertz of non-reserve spectrum evenly between them, which would leave each dominant provider a 10+10 megahertz block without having to directly compete against one another.¹²

Adopting a spectrum reserve of at least 40 megahertz will help ensure multiple carriers have an opportunity to acquire the low-band spectrum necessary to improve network reliability, extend coverage deeper inside buildings, and bring more meaningful consumer choice to rural and underserved areas throughout the United States.

The upcoming 600 MHz Auction offers one last opportunity for competitive carriers to acquire low-band spectrum in sufficient quantities for would-be competitors to challenge the dominant incumbents. Verizon and AT&T would benefit greatly if they can control the last of the essential

¹⁰ Received signal strength measurements taken inside buildings in downtown Cleveland increased by as much as 17 dBm following the deployment of service using low-band spectrum in that market.

¹¹ *T-Mobile Petition for Reconsideration* at 8 (explaining that larger aggregations of contiguous low-band spectrum allow carriers to balance demand across spectrum resources, improve resource utilization, and maximize spectrum efficiency).

¹² These figures assume a clearing target of at least 84 megahertz. At lower clearing targets, the amount of reserved spectrum would be reduced, while the amount of unreserved spectrum that AT&T and Verizon could split with impunity would remain at 40 megahertz. *MSH Order*, 29 FCC Rcd at 6208-6209 ¶ 184.

facilities we need to reach our customers, but consumers would suffer from reduced broadband innovation, less broadband investment, and slower broadband deployment.

Respectfully submitted,

/s/ Neville Ray

Neville Ray
Chief Technology Officer
T-Mobile USA, Inc.